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Please find below and/or attached an Office communication concerning this application or proceeding.

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/537,752
Filing Date: December 05, 2005
Appellant(s): LEISTER ET AL.

Charles N. J. Ruggiero
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 2/18/2010 appealing from the Office action mailed 7/14/2009.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

1-5, 8-9, 11, 13-19, 22 and 28-37.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the

subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

6,713,419	ONOZAWA	3-2004
6,817,212	ROMER	11-2004
3,193,400	GEFFCKEN	7-1965
5,648,302	BROW	7-1997
6,757,317	KUNERT	6-2004
4,356,544	SKEDGELL	11-1982
3,963,505	DUMESNIL	6-1976

WO 01/53222 to KUNNERT, 16 July 2001

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

'Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-7, 11, 13-19, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kunert WO/01/53222 in view of Onozawa 6713419 (and which utilizes Official Notice for claims 14, 16-17, 19 and 22)

Kunert 6757317 is relied upon as an English language equivalent for Kunert. Appellant has not questioned this reliance.

Kunert discloses the invention – except for the limitations regarding the composition of the glass and the 2-4 millimeter spacing for the tubes. Relevant portions of Kunert include the skull crucible (col. 1, line 10), induction heating the melting material (col 1, lines 44-52), and supplying coolant to the tubes of the skull

crucible (col. 1, lines 8-17), where the melting material contains borate (col. 4, lines 6-8, 'lanthanum borate glasses').

Onozawa discloses the use of lanthanum borate glasses within the scope of the compositional limitations of claim 1 - for example, Onozawa's example 1 - (Table 1 starting in col 8). Onozawa teaches this composition is good for precision molding of aspherical lenses (col. 1, lines 12-38) with "low cost", "high performance" and it decreases the number of lenses to be used in "designs of various kinds of optical devices). Onozawa's example 1 $B_2O_3 / (B_2O_3 + SiO_2) = 0.7$ using molar ratios and 0.74 using mass ratios. The "at least one" metal oxide comprises the next five oxides: the oxides of lanthanum, yttrium, zirconium, tantalum and calcium. Thus it would have been obvious to use the superior Onozawa glass as the Kunert lanthanum borate glass, for any or all of these disclosed advantages.

The art can also be applied in an alternative interpretation" using Onozawa as the primary reference. Given that Kunert teaches that the Kunert method eliminates impurities, corrosion and adherence of the glass melt (col. 2, lines 2-7) it would have been obvious to improve the Onozawa method, by using Kunert's superior method of melting lanthanum borate glass, for any or all of the Kunert advantages.

As to the 2-4 mm limitation: It is clear from Kunert's figure 1 that the cooling tubes have a spacing - but there is no indication as to what the spacing is. It would have been obvious to have the spacing as big or as small as needed, depending upon what the size of the apparatus is.

In re Rose , 220 F.2d 459, 105 USPQ 237 (CCPA 1955) (Claims directed to a lumber package "of appreciable size and weight requiring handling by a lift truck" where held unpatentable over prior art lumber packages which could be lifted by hand because limitations relating to the size of the package were not sufficient to patentably distinguish over the prior art.); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976) ("mere scaling up of a prior art process capable of being scaled up, if such were the case, would not establish patentability in a claim to an old process so scaled." 531 F.2d at 1053, 189 USPQ at 148.).

In Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

Clearly a small furnace with small tubes would have smaller spacings – as compared to a larger furnace with larger tubes.

It is noted that appellant has not established any criticality. As discussed in the arguments section of this Answer, the only related experiment of record from Appellant relates to a glass composition which falls outside the scope of the claimed composition

Claim 2: see Kunert, col. 2, line 12.

Claim 3: It would have been obvious to use whatever frequency is most suitable for the situation – depending upon the equipment most readily available.

Claim 4: Onozawa does not disclose the starting materials used to make the composition. It would have been obvious to use any of the claimed starting materials – depending upon which is the most economical source of boron for the final composition.

Claim 5: It would have been obvious to have the boron source material be as pure as reasonably possible - i.e. keep alkalis absent, so that one can control all the ingredients in a pure batch calculation.

Claim 11: See col. 2, lines 23-26 of Kunert which discloses that platinum can be used.

Claim 13: see claim 3 of Kunert.

Claim 14: Examiner took official notice that adding raw materials in pellet form is well known – so as to reduce dust problems and aid in melting in the 12/22/2008 Office action. In the 7/14/2009 Final rejection Examiner informed applicant that the well known in art statement is taken to be admitted prior art because applicant failed to traverse any of the assertions of official notice as per MPEP 2144.03. Thus it is deemed to be admitted prior art that adding raw materials in pellet form is well known – so as to reduce dust problems and aid in melting.

It would have been obvious to use a pellet form so as to reduce dust and/or aid melting. Alternatively, the term "pellet form" fails to define over Kunert because a pellet can be of any shape/form. Thus at least at a microscopic level even dust could have the form/shape of a pellet.

Claim 15: see for example see col. 8, line 21 of Onozawa. Also it is inherent that the glass would be stirred by convective currents.

Claim 16-17: Examiner took official notice that it is well known to blow gas below the surface of molten glass with a lance so as to fine and/or homogenize the glass. As indicated above, the Office can treat this as admitted prior art since such was not adequately traversed. The US patent classification system also has a subclass devoted to this concept (i.e. 65/124.5). It would have been obvious to blow a gas below the

surface with a lance so as to aid in forming a well-mixed batch – as is conventionally done.

Claim 18: it is deemed inherent that the glass is refined during the melting.

Claims 19 and 22: Examiner also took official notice that it is well known to run commercial melting operations in a continuous method where raw ingredients are added to a melting chamber, then the glass moves on to fining sections, and homogenizing sections where the glass can be cooled to the final working temperature. As indicated above, the Office can treat this as admitted prior art since such was not adequately traversed. It would have been obvious to utilize the well known continuous process to create the Onozawa glass, rather than a batch process, for any of its well known advantages.

From MPEP 2144.04

E. Making Continuous

In re Dilnot, 319 F.2d 188, 138 USPQ 248 (CCPA 1963) (Claim directed to a method of producing a cementitious structure wherein a stable air foam is introduced into a slurry of cementitious material differed from the prior art only in requiring the addition of the foam to be continuous. The court held the claimed continuous operation would have been obvious in light of the batch process of the prior art.).

Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kunert WO/01/53222 in view of Onozawa 6713419 as applied to claim 1 above, and further in view of Romer 6817212.

Kunert does not disclose the short circuit. Romer teaches to short circuit the pipes to increase the life of the pot (col. 2, lines 19-33). It would have been obvious to short circuit the pot as disclosed in Kunert, so as to extend its life.

Claim 9: it would have been obvious to only short circuit at one location – depending upon the size of the pot. It would have been obvious to omit the second short circuit ring when it is not needed.

Claims 1, 29 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kunert WO/01/53222 in view of Geffcken 3193400

Geffcken's glass is an "improved" optical glass and has an extremely high refractive index and Abbe value (col. 1, lines 11-13). It would have been obvious to use the Geffcken composition as the Kunert Lanthanum borate glass, for its superior properties. Alternatively, it would have been obvious to create the Geffcken glass objects by using the Kunert improved method (that eliminates impurities, corrosion and adherence of the glass melt) for making glass.

Claim 29: by Examiner's calculations of converting the wt % to mol %. The first glass of the table of example 2 of Geffcken has 72% B₂O₃, 22 % La₂O₃ and 6% Y₂O₃.

Claim 37 is clearly met.

Claims 1 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kunert WO/01/53222 in view of Brow 5648302

As in the above rejections: it would have been obvious to use the Brow composition in the Kunert method, for the advantages of the Brow composition, or for the advantages of the Kunert method.

Claim 28: Looking to claim 12 of Brow. The boron and silicon oxides limitations are clearly met. The GaO₃ composition is 0; it is deemed that the broadest reasonable interpretation of the list of three oxides of Al, Ga and In is in the alternative - that is only one of the three must be in the 0-0.5 % range. The 0-40% range is met because CaO and BaO is 18%. The 0-27% range is met as La And La oxides equal 12%. And the 27-40% range is met because the summation is 30. The rest of the limitations are clearly met.

Claims 1 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kunert WO/01/53222 in view of Skedgell 4358544

As in the above rejections: it would have been obvious to use the Skedgell composition in the Kunert method, for the advantages of the Skedgell composition, or for the advantages of the Kunert method. See for example Glass A of table 1A of Skedgell for claims 30-31. Claim 33: the Ga and In are the substances selected from the group.

Claims 1 and 30-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kunert WO/01/53222 in view of Dumesnil 3963505

As in the above rejections: it would have been obvious to use the Dumesnil composition in the Kunert method, for the advantages of the Dumesnil composition, or for the advantages of the Kunert method. See for example Glass VIII of table 2 of

Dumesnil for claims 30-31. Examiner's conversion yields 59.6 molar % PbO, 25.7 % B₂O₃ and 14.7 % SiO₂. And 0% Bi₂O₃.

The limitations of claims 1 and 30-36 are clearly met.

(10) Response to Argument

It is argued that the rejection lacks a determination of the level of skill in the art. As indicated in MPEP 2141 the determination can be implicit in the prior art applied: "Any obviousness rejection should include, either explicitly or implicitly in view of the prior art applied, an indication of the level of ordinary skill." As set forth in the final rejection: "The level of skill is readily evident from the applied art and the cited case law. There is no requirement that the Office set forth the level of skill when such is clear and applicant has not shown (or suggested how) the lack of stating such does (or could possibly have any effect on the finding of obviousness in the present application.

The various comments regarding an advisory action are all moot since there is no advisory action in the present application .

As to the assertion that the Office action presents no line of reasoning, why one of ordinary skill would combine the references. The final rejection points to the 12/22/2008 rejection – such clearly states all the reasoning.

It is argued that it would not have been obvious when viewing the "slit" disclosure to have the spacing between 2mm and 4mm because such ensure that the think skull

layer that forms on these tubes do not break and do not flash over is simply not break and does not flashover. This is not very relevant. The rejection is based on making the spacing as big or as small as necessary to make the Kunert invention work with a specific example of the type of glass (lanthanum borate glass) teaches to use. Examiner understands that the 2-4 mm range is simply the range that works.

In re Aller, 220 F.2d 454, 456 (CCPA 1955) ("[I]t is not inventive to discover the optimum or workable ranges by routine experimentation.").

It is argued that the Office fails to recognize the thickness of the crucible has nothing to do with the spacing between the crucible cooling tubes; that the spacing between the tubes is independent of the size of the crucible. Examiner fails to see any evidence or rationale to support this. It is well understood, and largely a matter of common sense, that supporting structures need to be thicker as the final object increases in size. For example one could not make a bridge span the Mississippi with matchstick – thick supports, but such is possible on a table-size bridge. A doll house could be made from cardboard, but a life size house would collapse under its own weight if the same (thickness) cardboard were used. One of ordinary skill (who would be knowledgeable about furnace design and thus knowledgeable about heat flow) would immediately understand that using 2 inch tubes at a spacing of 2-4 mm would be much stronger than using 2 mm tubes at a spacing of 2-4 mm. Or taken to the extreme, much stronger than using 20-micron tubes at a spacing of 2-4 mm. Wall thickness influence wall strength. One would understand that with the much smaller tubes, the total heat transfer surface area of the tubes would be significantly reduced. Moreover

the coolant carrying capacity of the tubes would be much less, the cross-sectional area of each tube would be proportional to the square of the tube diameter. In other words, one would understand that at some sufficiently small diameter tube, the tubes would be incapable of withdrawing sufficient heat to maintain wall strength. Thus the tube/wall thickness does effect the crucible's strength.

It is further argued that the spacing of the tubes is not dependent upon the crucibles dimensions. This assertion is not based on any evidence that Examiner could find. .

From **MPEP 2145 Consideration of Applicant's Rebuttal Arguments**

I. ARGUMENT DOES NOT REPLACE EVIDENCE WHERE EVIDENCE IS NECESSARY

Attorney argument is not evidence unless it is an admission, in which case, an examiner may use the admission in making a rejection. See MPEP § 2129 and § 2144.03 for a discussion of admissions as prior art.

The arguments of counsel cannot take the place of evidence in the record. In re Schulze, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965); In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997) ("An assertion of what seems to follow from common experience is just attorney argument and not the kind of factual evidence that is required to rebut a prima facie case of obviousness."). See MPEP § 716.01(c) for examples of attorney statements which are not evidence and which must be supported by an appropriate affidavit or declaration.

The Brief points to page 11, line 13 to page 13, line 6 of the specification as showing that the only two relevant parameters are the tube spacing and the low viscosity. Examiner disagrees because page 12, lines 16 -22 states it is "possible" to prevent the glass from leaking if the spacing is less than or equal to 4mm; and page 12, lines 33-34 indicates that the 2mm lower limit as being merely "favorable". Examiner

fails to see how these teaching are suggestive of any criticality or new or unexpected results. The term "possible" indicates a necessary requirement, but not sufficient.

It is also argued that the present application determined that a spacing of 5 mm fails when using an extremely low viscosity fails. This is not very relevant because the claims are not directed to "extremely low viscosity" glass. The only actual test results that Examiner can find (Example 3, page 31) are not within the scope of claim 1 which requires metal oxides of at least 25%. Glass number 8 has only two metal oxides alumina and lead oxide for a total of 23.5 molar %. To one of ordinary skill, neither boron nor silicon is a metal.

It is well established that the evidence relied on to establish unobviousness must be commensurate in scope with the claimed subject matter. See *In re Kerkhoven*, 626 F.2d. 846, 851, 205 USPQ 1069, 1072-1073 (CCPA 1980) and *IN re Clemens*, 622 F.2d 1029, 1035, 206 USPQ 289, 296 (CCPA 1980).

But even if one can consider glass 8 as being analogous to the claimed compositional ranges, such is still not convincing because the details of the testing are lacking. There is no indication as to whether the same size tubes were used, or if the coolant flow rates were altered to compensate for the use of fewer tubes. There is no evidence or reasoning which tends to suggest that appellant's purported new and unexpected results would be commensurate in scope with the claims which are open to any size cooling tube, with any coolant flow rate, at any temperature and at any height.

The reported results come from a 10 liter skull crucible. But it does not seem reasonable that one can extrapolate that a 10,000 liter skull crucible (i.e 10 times as tall) could also hold the glass, since the static pressure on the walls at the bottom would be 10 times the force.

The argument regarding optimizing the spacing are not all that relevant. The rejection is based on finding the workable range. Given that Kunert teaches a spacing between the tubes, it would not be invention for one to find out what spacings would work and which would not work. As pointed out at col. 2, lines 8-13 "a plurality of metal pipes...lie next to each other in such a way that they form a container. " Clearly if one of ordinary skill would use a spacing which results in glass flowing through the spacing, then the inventor would not have met the requirement "they form a container" since they failed to contain. One would then realize that he failed to have the tubes lie next to each other in such a way that they form a container.

To put it another way, appellant appears to suggest the 6757317 is not fully enabled, since it is beyond a matter of routine experimentation to make an use the 6757317 invention with many lanthanum borate glasses. Even though col. 4, line 8 of Kunert discloses such can be used. Patent 6757317 is presumed valid and fully enabled. Applicant has not provided any analysis/evidence (such as indicated in MPEP 2164) which shows it is anything but routine experimentation for one to be able to make a Kunert container (that actually contains and not leak) with known lanthanum borate glasses (such as those of Geffcken, Brow and Onozawa).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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